

CAN INDIA BECOMES A MAJOR GOLD PRODUCER?

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Back in 1980 Australia produced 17 tonne of gold, and had 400 tonne of identified reserves. Advancing from that modest level, over the following 20 years Australia produced 3700 tonne of gold valued at US \$ 46 billion with another 5000 tonne of identified reserves still available to be tapped.

Put simply, Australia has discovered 8300 tonne of gold in the past two decades. In the history of gold mining, I know of no other country that has had such a phenomenal rate of growth in its gold resource base, with the exception of South Africa and its Witwatersrand Basin.

A proportion of that 8300 tonne was realised from the workings of old mines in established gold provinces but there have been numerous new mines producing more than 100,000 ounces a year, so the exploration success of these discoveries is real.

One reason for this phenomenal rate of growth has been the development of new technologies for chemical analysis, sampling and processing. These include large-scale open pit/ bulk underground mining and use of latest ore treatment and extractive metallurgical techniques especially carbon in pulp for gold recovery. Another reason is better understanding of the weathering process of ore bodies. A further reason is the support and research and development undertaken by Australian Government agencies, the results of which are published and available to all in the mineral industry at no cost. The crowning glory has been the quantum of gold exploration expenditure incurred that has led to new discoveries in the past.

In addition, Australia's geological prospectivity, mining tenement system and legal framework have provided a relatively favourable investment environment for mineral development. As a result, in international surveys, Australia has been consistently ranked very highly as a recipient of foreign investment. Whilst Canada has now replaced Australia as the industry's favourite destination for exploration, Australia has been perceived to be amongst the least risky country globally in which to invest. There are concerns in Australia about the increasing bureaucracy associated with indigenous people's land rights, green tape, and land access but these are more than offset by Australia's low risk ranking on civil unrest, infrastructure, social risk, natural disasters and importantly sovereign risk.

Government policy towards mining and minerals resources is encapsulated in the Minerals and Petroleum Resources Policy Statement released in 1998. The statement is a commitment to provide investors with positive, stable framework of relevant government policies, which to a large extent remove uncertainty and promote increased investment.

Large amounts of capital for exploration in Australia has been historically sourced through the public who has over the years developed a keen interest in backing exploration and mining floats causing several boom cycles during the past three decades. Some of these cycles have been powered by news of a discovery. "Poseidon's (A Nickel explorer) October 1 (1969) announcement of 3.56% nickel had sparked a boom even greater than that of the golden 1890s," writes Trevor Sykes, an Australian journalist in "The money miners". "Poseidon shares hit \$13.30 on October 1 before closing at \$12 for a \$5 gain on the day. On October 2 they climbed a further \$6.40 to \$18.40. Professionals had dominated the market at first, but small investors quickly caught the excitement and plunged into the market, clamoring for Poseidon and other stocks. So many investors flooded the Sydney Stock Exchange building on October 2 that many could not reach the third level of the building where the public gallery was situated."

Whilst Australia has achieved tremendous exploration success in the previous two decades, the reason Canada has lately overtaken Australia as the favourite exploration destination becomes clear when one compares the amount raised and spent on exploration by each of these countries. The amount raised by junior and mid sized companies in the last year in Australia has been in the vicinity of US \$150 - \$200 m. In comparison, the Canadian market for precious metal companies has raised US \$3.3 billion in the same period. The mineral discovery rate in Australia has therefore recently fallen.

In India, estimates suggest the total amount spent on precious metals exploration over the past 20 years has averaged a dismal US\$ 35m per annum or put together substantially short of the amount targeted for exploration by Canada in one year alone. The exploration activities have historically followed a two-tiered system. The Geological Survey of India (GSI) has undertaken the initial regional scale

geological mapping and preliminary exploration in identified areas. The Mineral Exploration Corporation Ltd (MECL) has taken up the prospects recommended by the GSI for detailed exploration. The ore reserves estimated by MECL have formed the basis for further assessment of the deposit.

According to experts, the Indian gold mining history could be between 6000 to 8000 years old. There are several known old gold workings in the Kolar, Hutti, Gadag, Wynad goldfields and elsewhere. It appears though that Wynad was responsible for the great gold boom of 1880 when 33 companies with an aggregate capital of over 4,000,000 sterling pounds were floated in the London market, reports an article by the Bharat Gold Mines Ltd.

Until recently, the greenstone belts of the Dharwar Craton in Karnataka hosted India's only two major gold mines, at Kolar and Hutti. The Kolar mineralised system is 8 km in strike and 2 km wide. The mine is now shut down, after producing 800 tonne of gold from 50 million tonne of ore, at an average grade of 16g/t of gold. The Hutti mine has produced 100 tonne of gold from its underground operations since 1898. Its mineralised system is 4 km in strike and 1 km wide. The Hutti ore body is currently being mined at a depth in excess of 800 meters.

However, the GSI lists several belts through out the country with known gold mineralisation. Some of these in the Southern region alone are the Ramigiri- Penakacherala schist belt with a strike length of 350 km and up to 8km width, the Jonnagiri Schist belt, the Gadwal schist belt, the Kadiri greenstone belt, the Nellore tectonic belt, the Cuddapah basin, the Shimoga- Dharwar schist belt, the Gadag schist belt, the Hutti Maski schist belt and so on. There are several areas in India spread over thousands of square kms that deserve detailed attention. Some of these areas have been worked upon by Deccan Gold Mines Ltd. Most of these areas have also been explored by the GSI. The GSI and Deccan Gold have both encountered gold mineralisation in these areas.

Some of these areas represent the same geological and structural settings as the major gold producing regions in the world such as the Yilgarn Craton in Western Australia, Superior Province in Canada, and the ancient rock formations in parts of Africa, Brazil and China.

Peninsular India and Western Australia share a close geological relationship as the two land masses were adjacent to each other more than 200 million years ago within the ancient super continent geologists call Gondwana Land.

In some areas the gold is buried deep into the ground. In other areas it is closer to the surface providing easier access. In many other areas, strong weathering of mineral deposits has radically changed the tell tale expression of mineralisation in the near surface environment impeding their detection within the surrounding barren rock mass.

New techniques that assist mineral explorers to predict where buried gold deposits are most likely to occur even where there is no trace of it on the surface using 3D computer visualisation and modelling tools that relate deformation in the rock to the flow of mineral fluids containing gold are now available to assist with exploration efforts. The technique has the potential to have a major and fundamental impact on gold exploration in difficult regions buried beneath a sandy shroud and also deeper within the earth's surface.

Geologically, the Indian terrain lends itself to the potential for large discoveries. So why has India severely lagged behind the great gold producing nations of South Africa, Australia and the like in the last two to three decades?

The answer lies in lack of adequate exploration expenditure, inadequate use of the world's latest exploration and mining techniques, closure of this industry to foreign direct and private investment until recent times, mining regulations that still do not foster favourable investment into the industry and slow down rather than fast track the permit granting process, different interpretations of the mining regulations between the various states, the inability to raise large amounts of exploration capital within India, and inadequate importance to using the world best practice in management of environment, health, safety and community interests around mine sites.

Can India become a large producer of Gold in time to come? Yes, but only if the exploration spend rate is significantly increased and steps are taken to address the above problems. The first such step was the opening up of the precious metals industry to private and foreign direct investment. Lots more exploration dollars have since come into the country. The potential to substantially increase this amount remains strong but the government must simplify the mining regulations and fast track the permit granting process.

The government must also make information available to the industry, on the results of exploration work undertaken by The GSI and other government agencies, if not for free as is the norm in Australia and other countries then at a minimal cost, especially where the work has been done in areas over which the private sector has since been given rights to explore. The current cost of this information is sometimes prohibitively expensive particularly when you consider that the information being sold may not necessarily lead to the successful exploitation of minerals in the area. What good is the information doing in government archives when it could be utilised for the benefit of the taxpayers who funded this exploration in the first place?

Reduced mineral exploration activity is likely to lead to fewer new discoveries. On the other hand, according to a study undertaken in Western Australia by the Department of Treasury and Finance a couple of years ago, if mineral exploration investment were to increase by \$100m (and be maintained for five years), then the projected cumulative benefits over the next twenty years for the state would be \$10.4 billion in investment, \$45.8 billion in export revenue, \$32 billion in gross state product, \$1.7 billion in State Government Revenue, and creation of several thousand new jobs with most of these in the regional areas. Surely, the benefits for India would be even greater as much of the heavy machinery required for mining and milling is being and can be manufactured in India, while it is imported in Western Australia. Clearly, there is a desperate need for India to wake up and realise on its exploration potential in the precious metals sector.

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